

CLAIMS

1. A polymer electrolyte composite comprising an electrolyte and an acrylic polymer containing a copolymer of acrylic derivative, wherein said electrolyte comprises a polar solvent and a solute comprising at least one of inorganic acids, organic acids and salts of both of said acids, and wherein said copolymer of acrylic derivative is a polymer of: a first monomer of at least one of a group of monofunctional monomers of acrylic derivatives each having at least one hydroxyl group at a terminal thereof and a polymerizable unsaturated double bond; and a second monomer of at least one of a group of multifunctional monomers of acrylic derivatives each having plural polymerizable unsaturated double bonds.

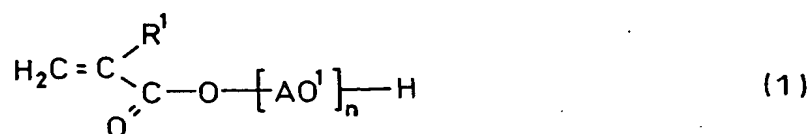
2. The polymer electrolyte composite according to claim 1, wherein said copolymer of acrylic derivative constitutes a copolymer matrix, and said electrolyte is incorporated in said copolymer matrix.

3. The polymer electrolyte composite according to claim 1, wherein said copolymer of acrylic derivative contains a polyoxylalkylene group.

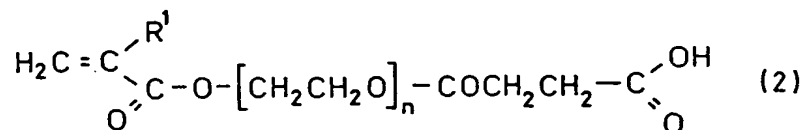
4. The polymer electrolyte composite according to claim 1, wherein said solute is free of metal salts as cations.

5. The polymer electrolyte composite according to claim 1, wherein said solute comprises at least one salt selected from the group consisting of ammonium salts, amine salts and amidine salts.

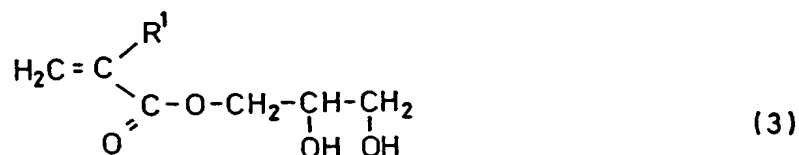
6. The polymer electrolyte composite according to claim 1, wherein said group of monofunctional monomers are acrylic derivatives expressed by the following Formulas (1) to (4), and said group of multifunctional monomers are acrylic derivatives expressed by the following Formulas (5) to (16):



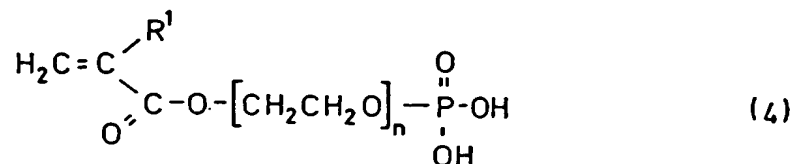
where R¹ is H or an alkyl group having 1 to 5 carbon atoms, AO¹ is an oxyalkylene group having 2 to 4 carbon atoms, and n is 1 to 200, on average, of oxyalkylene group having 2 to 4 carbon atoms:



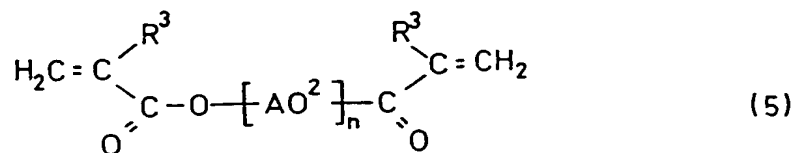
where R¹ is H or an alkyl group having 1 to 5 carbon atoms, and n is 1 to 200, on average, of oxyalkylene group having 2 carbon atoms;



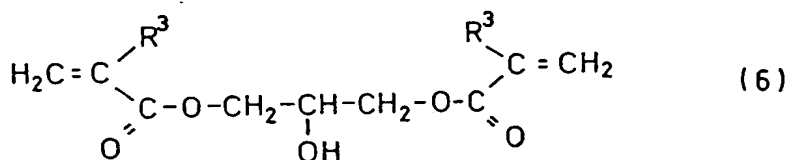
where R¹ is H or an alkyl group having 1 to 5 carbon atoms;



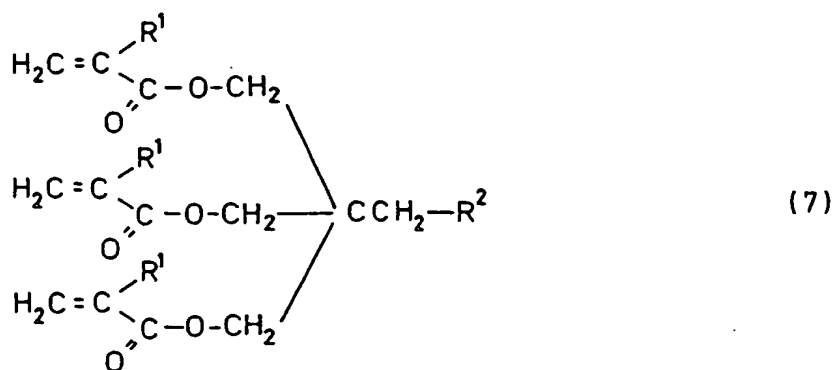
where R¹ is H or an alkyl group having 1 to 5 carbon atoms, and n is 1 to 200, on average, of oxyalkylene group having 2 carbon atoms;



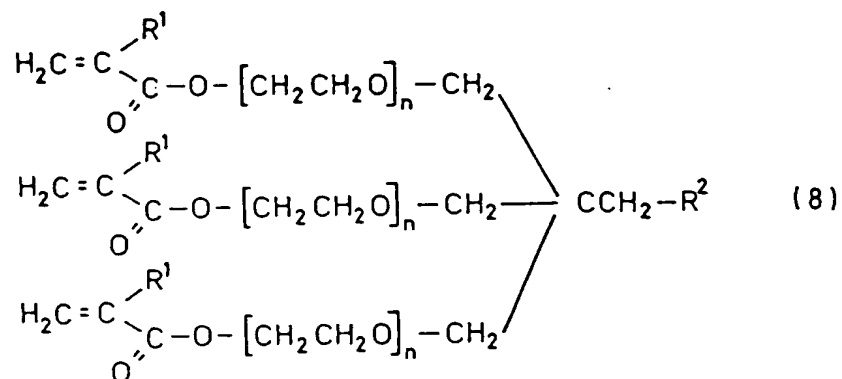
where R³ is H or an alkyl group having 1 to 5 carbon atoms, AO² is an oxyalkylene group having 2 to 4 carbon atoms, and n is 1 to 200, on average, of oxyalkylene group having 2 to 4 carbon atoms;



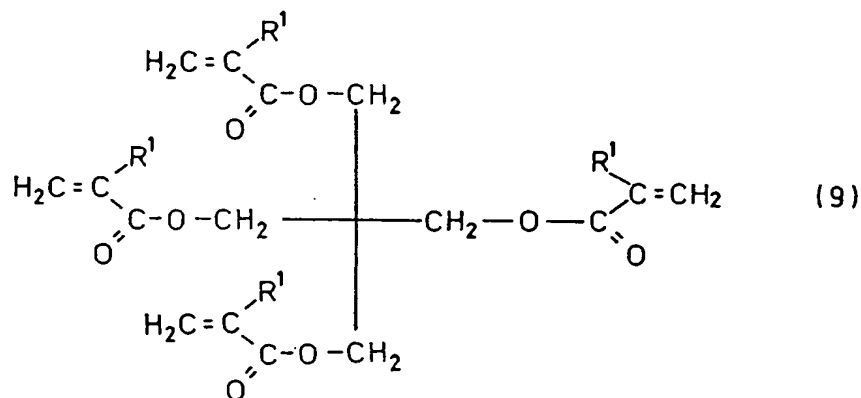
where R³ is H or an alkyl group having 1 to 5 carbon atoms;



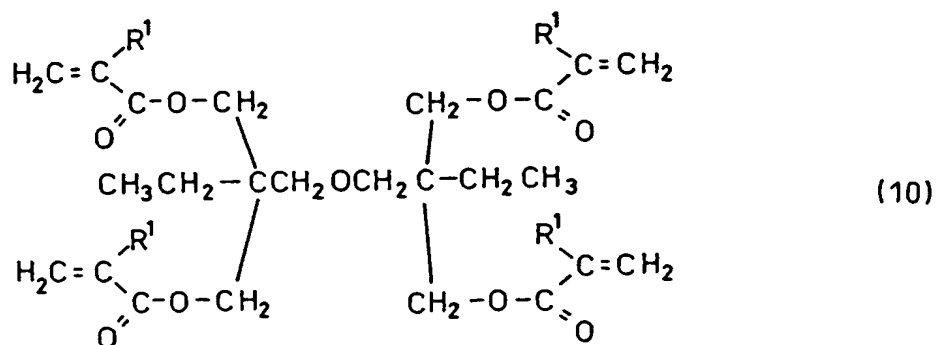
where R¹ and R² are each independently H or an alkyl group having 1 to 5 carbon atoms;



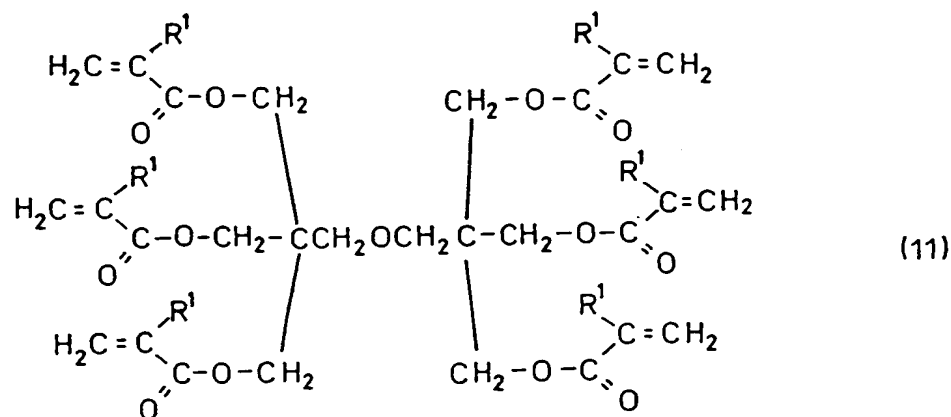
where R^1 and R^2 are each independently H or an alkyl group having 1 to 5 carbon atoms; and l , m and n are each 1 to 200, on average, of oxyalkylene group having 2 carbon atoms;



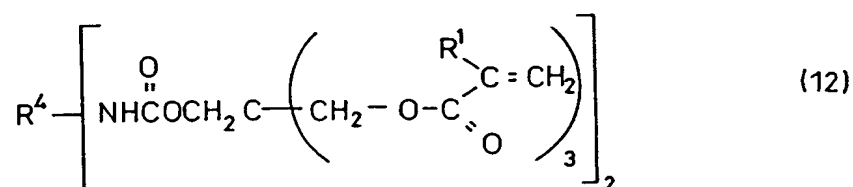
where R^1 is H or an alkyl group having 1 to 5 carbon atoms;



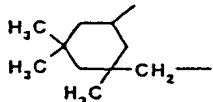
where R¹ is H or an alkyl group having 1 to 5 carbon atoms;

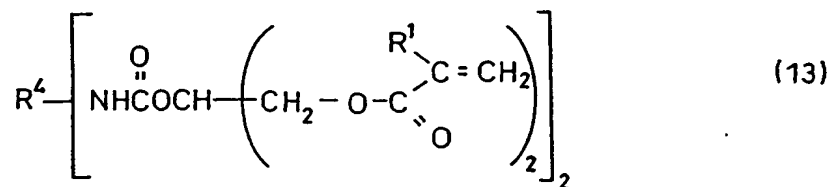


where R¹ is H or an alkyl group having 1 to 5 carbon atoms;

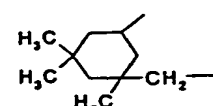


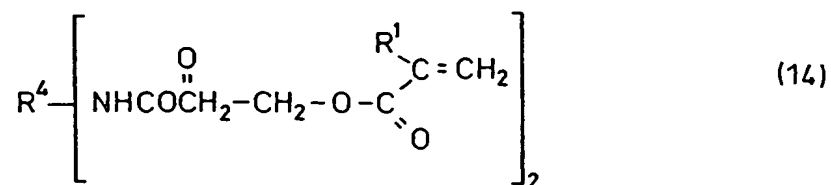
where R¹ is H or an alkyl group having 1 to 5 carbon atoms,

R⁴ is $-(\text{CH}_2)_n-$, $-(\text{C}_2\text{H}_4\text{O})_n-$ or  and n is 1 to 9;

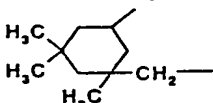


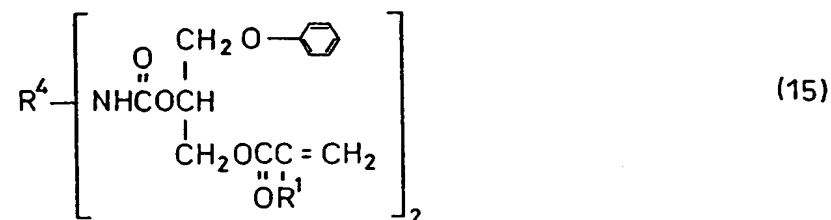
where R¹ is H or an alkyl group having 1 to 5 carbon atoms,

R⁴ is $-(\text{CH}_2)_n-$, $-(\text{C}_2\text{H}_4\text{O})_n-$ or  and n is 1 to 9;

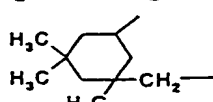


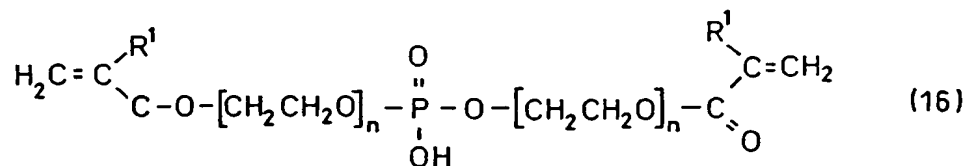
where R^1 is H or an alkyl group having 1 to 5 carbon atoms,

R^4 is $-(\text{CH}_2)_n-$, $-(\text{C}_2\text{H}_4\text{O})_n-$ or  and n is 1 to 9;



where R^1 is H or an alkyl group having 1 to 5 carbon atoms,

R^4 is $-(\text{CH}_2)_n-$, $-(\text{C}_2\text{H}_4\text{O})_n-$ or  and n is 1 to 9;
and



where R^1 is H or an alkyl group having 1 to 5 carbon atoms, and
 n is 1 to 9.

7. The polymer electrolyte composite according to claim 1, wherein the weight ratio of said first monomer to said second monomer is from 100:3 to 3:100.

8. The polymer electrolyte composite according to claim 1, wherein the sum weight of said solute and said

copolymer of acrylic derivative contains said copolymer in an amount of 5 to 50 wt%.

9. An electrolytic capacitor comprising an anode foil, a cathode foil and a separator sandwiched by said anode and said cathode foils, wherein said separator contains a polymer electrolyte composite for driving said electrolytic capacitor, wherein said polymer electrolyte composite comprises an electrolyte and an acrylic polymer containing a copolymer of acrylic derivative, wherein said electrolyte comprises a polar solvent and a solute comprising at least one of inorganic acids, organic acids and salts of both of said acids, and wherein said copolymer of acrylic derivative is a polymer of: a first monomer of at least one of a group of monofunctional monomers of acrylic derivatives monomer of each having at least one hydroxyl group at a terminal thereof and a polymerizable unsaturated double bond; and a second at least one of a group of multifunctional monomers of acrylic derivatives each having plural polymerizable unsaturated double bonds.

10. The electrolytic capacitor according to claim 9, wherein said separator has a weighting of 0.01 to 55 g/m².

11. The electrolytic capacitor according to claim 9, wherein said separator is of a porous resin film or a nonwoven fabric.

12. The electrolytic capacitor according to claim 9, wherein said separator has a porosity of 10 to 90 %.

13. A method of making an electrolytic capacitor, comprising: a step of making a capacitor precursory body comprising an anode foil, a cathode foil and a separator sandwiched between said anode and said cathode foils; a step of impregnating a starting liquid of a polymer electrolyte composite to said capacitor precursory body, thereby to make a starting electrolytic capacitor element; and a step of curing said starting liquid of said polymer electrolyte composite in said starting electrolytic capacitor element, wherein said starting liquid of polymer electrolyte composite comprises a mixture of: an electrolyte solution comprising a polar solvent and a solute comprising at least one of inorganic acids, organic acids and salts of both of said acids; a first monomer of at least one of a group of monofunctional monomers of acrylic derivatives each having at least one hydroxyl group at a terminal thereof and a polymerizable unsaturated double bond; and a second monomer of at least one of a group of multifunctional monomers of acrylic derivatives each having plural polymerizable unsaturated double bond.